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Cable vault lids with solar panels

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ABSTRACT

This disclosure describes techniques fiber optic cable vault lids with built-in solar panels. Vault lids are built with suitable materials based on deployment location. Power generated by the solar panels is used to power equipment such as Wi-Fi access points, power monitors, etc. within the fiber optic cable vault. Surplus power is supplied to the grid. By having power generation built-in, the fiber optic cable vault lid enable vaults to be deployed in locations where external power is unavailable. This improves the ability to communicate with fiber mid points, maintain health of the fiber network, and ease isolation of faults. Owners of fiber optic cable networks, e.g., ISPs, can utilize the fiber optic cable vault lids.

KEYWORDS

- Vault lid
- Solar panel
- Cable vault
- Fiber optic network

BACKGROUND

Fiber optic cable networks are faster, more reliable, and more efficient than traditional copper wire networks. Data packets are transmitted through fiber optic cables via pulses of light rather than electrical signals. Because data packets are transmitted via light pulses, electricity is only required at the end points of fiber optic cables. Large portions of the fiber cable network carry data without being supplied with power. Cables for such networks can span long distances. Cable vaults (e.g., semi-subterranean vaults) are used to house cable splits and other electrical equipment.

Because most the network is not supplied with power, communication is possible only with network end points, rather than the whole network. This puts a strain on data accuracy and record keeping to isolate faults in the network and the maintain network health. Further, powered equipment, e.g., Wi-Fi access points along the network can only be deployed where there is an existing power supply.

A fiber optic network uses a large number of vault locations for underground construction. Lids of fiber optic cable vaults are often exposed at ground level, e.g., sidewalks, etc. that are near end users. Cable vault lids are typically made of plastic or concrete.

Operators of fiber optic networks, e.g., Internet service providers, can maintain tens of thousands of fiber optic cable vaults. For large fiber optic networks, the total surface area of cable vaults that is exposed to the sun can be of the order of several hundred thousand square feet.

DESCRIPTION

This disclosure describes techniques to use fiber optic cable vault lids that include a solar panel. The solar panel can be used to power network equipment that would otherwise be unavailable at the vault's location. For example, such equipment can include power monitors for the passive part of the fiber optic network, Wi-Fi access points, and other electrical equipment.

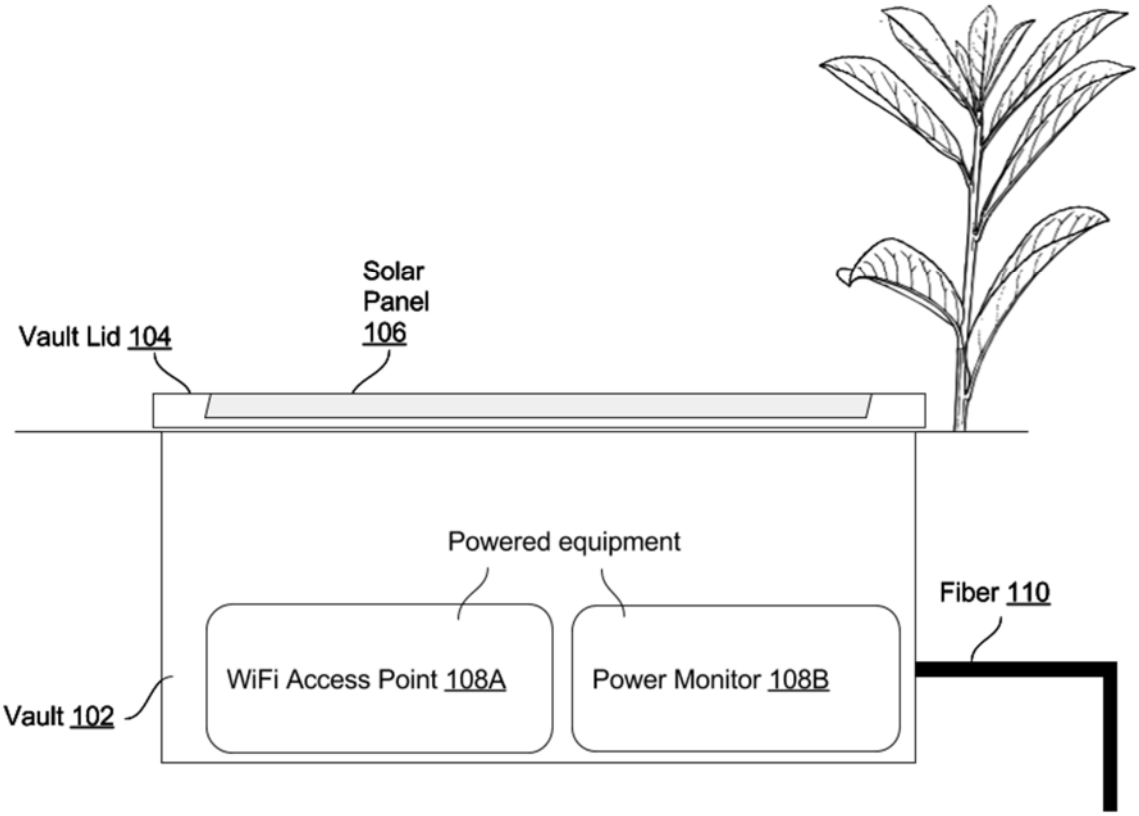

Fig. 1: Fiber optic cable vault with a solar panel lid

Fig. 1 illustrates a fiber optic cable vault with a solar panel lid. Fiber (110) is connected via vault (102) that includes a lid (104). The housing of the lid includes a solar panel (106). The solar panel powers equipment inside the vault. The equipment can include any type of powered equipment, e.g., Wi-Fi access point (108A), power monitor (108B), etc.

In different deployment locations, e.g., vaults placed in grass, vaults placed on sidewalks, vaults placed in asphalt, etc., lids are built with materials of suitable strength and of suitable size to house equipment underground. The vault is recessed in concrete such as a sidewalk where the vault lid and solar panel are exposed at the ground level. The vault can also be recessed in asphalt, such as in a street, in grass, such as in a lawn, or any other location.

The vault lid and solar panel are constructed to withstand conditions at the location where the vault is places. For example, a vault lid with a solar panel for a vault placed in a sidewalk is designed such that it has adequate strength to support the weight of people walking or running over the lid.

Electricity generated by the solar panel can also be used to charge a battery that provides power to the network equipment when the solar panel is unable to generate power (e.g., at night). Additionally, surplus electricity can be sold to the power grid.

As the built-in solar panels provide a local energy source, monitoring equipment can be powered. Such fiber optic cable vaults can thus be deployed in locations where external power is unavailable. This improves the ability to communicate with fiber mid points, maintain health of the fiber network, and ease isolation of faults.

CONCLUSION

This disclosure describes techniques fiber optic cable vault lids with built-in solar panels. Power generated by the solar panels is used to power equipment such as Wi-Fi access points, power monitors, etc. within the fiber optic cable vault. Surplus power is supplied to the grid. By having power generation built-in, the fiber optic cable vault lid enable vaults to be deployed in locations where external power is unavailable. This improves the ability to communicate with fiber mid points, maintain health of the fiber network, and ease isolation of faults.